A PRELIMINARY TEST AND DEMONSTRATION OF THE INDIFFERENCE-SCALED FACTOR PROFILE TECHNIQUE IN FOREST SERVICE REGIONAL PLANNING

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Resource-Related Policy Research Program

Utah State University

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Co-operative Agreement No. 16-851-CA

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ABSTRACT

Resources planners face several problems with the evaluation and display of technical information and values or preferences in relation to trade-offs between resources development alternatives. The factor profile technique was used by the Executive Group of Region 2 of the USDA Forest Service in an attempt to resolve some of these problems. Choices between different but overlapping alternative programs were facilitated, clear understandings of the factors and their output levels were obtained, misconceptions were discovered and eliminated, preferred output levels were identified without obscuring the decision process by mathematical manipulations, and the rationale for the final decisions was documented thereby providing a summary of the group's feelings and opinions. This documentation was utilized by the Executive Group in negotiations with the Washington Office regarding the Region's proposed 1980 RPA regional plan alternatives.

EXECUTIVE SUMMARY

The purpose of this study was to apply the indifference-scaled factor profile technique and evaluate its effectiveness in a Forest Service regional planning and decisionmaking situation. In particular, the study used the factor profile technique to document the rationale of the decisions concerning the suggested Washington Office and Regional Office (Region 2) alternatives for the 1980 RPA update.

The indifference-scaled factor profile technique is a method for systematically examining trade-offs and documenting the decision rationale used in arriving at a preferred alternative from among a number of wildlands management alternatives. The technique is consistent with the draft National Forest Management Act forest planning regulations, and relates most directly to those sections in the regulations that deal with the formulation and evaluation of alternatives.

The technique was applied in this study by both the Region 2 regional planning staff and the Executive Group. Based upon the outcome of these applications, the following observations about the technique and its effectiveness as a regional planning decision aid are offered:

1. The factor profile technique proved to be a good procedure for identifying the factors in terms of which alternatives should be evaluated and for developing a common understanding of the meaning of those factors;

2. The technique was highly effective in identifying important trade-offs between alternatives and in structuring a systematic process for comparing

alternatives and evaluating trade-offs between them;

3. The technique was successfully used to effectively and efficiently elicit and document decision makers' values and opinions concerning trade-offs between alternatives;

4. The technique proved very useful in identifying areas where alternatives could be modified and improved; and,

5. The technique was an effective means of imparing to decision makers a common understanding of real resource constraints and interactions, thus providing a more decisive picture of which decisions are most critical for the regional plan.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

AN OPERATIONAL TEST AND EVALUATION OF THE INDIFFERENCE-SCALED FACTOR PROFILE TECHNIQUE IN FOREST SERVICE REGIONAL PLANNING

1.0 INTRODUCTION

1.1 Background

Decisionmaking associated with Forest Service plans and programs often involves a formal development, analysis, and evaluation of alternatives prior to selection of a preferred alternative or course of action. Although consideration of alternatives in decisionmaking at national, regional, and local levels is common, procedures for organizing information in a manner which facilitates its use without masking real differences between alternatives are not in general use. Also, procedures which make possible the explicit statement of value judgments about the trade-offs between alternatives have not been widely applied.

The indifference-scaled factor profile technique (see L. Suhr, Managing outcomes. unpublished ms. 1977, and M. McKee, L. Suhr, and A. B. Bishop, An Operational Test of the Factor Profile Technique in Forest Service Planning, interim progress report. 1978, cooperative agreement no. 16-760-CA) provides a way of explicitly considering and documenting decision makers' value judgments in the decisionmaking process. In addition, the technique:

1. Separates the different priceable consequences of alternatives from the non-monetary consequences so that they do not become confused in the analysis;

2. Provides a means by which to display the different factors relevant to making choices in complex decisionmaking where it is important to be able to deal with a large amount of information on which to base the decisions;

3. Provides a means for comparing the incremental differences in quantifiable and ill-quantifiable factors among alternatives and contrasting them with the differences in priceable factors;

4. Provides for separation of viewpoints as well as an analysis of the over-all impact. It shows the incidence of impacts upon interest groups, brings out the points of agreement or disagreement among these groups, and serves as a mechanism in resolving those conflicts; and,

5. Can be a useful tool during the planning process in defining the factors which are important to interested publics, in establishing goals and objectives, in evaluating and making decisions among alternatives, and in formulating new alternatives.

1.2 Purpose

Broadly speaking, the purpose of this study was to apply the indifference-scaled factor profile technique and evaluate its effectiveness in a Forest Service regional planning and decisionmaking situation. In particular, the study was to use the indifference scaled factor profile technique to document the rationale for the decisions concerning the suggested Washington Office (WO) and Regional Office (RO) alternatives for the 1980 RPA update.

1.3 Objectives of The Study

The specific objectives of this case study were:

1. To apply the technique with the Regional Planning Technical Staff of the Forest Service, Region 2;

2. To summarize the information generated in Objective 1 in a composite position for each of the proposed alternatives, and to present this summary to the Executive Group;

3. To assist the Executive Group in using the technique to arrive at the Group's own position;

4. To prepare documentation of the above activities and products suitable for presentation and discussion with the Washington Office; and,

5. To evaluate and document the entire process, including any resulting Washington Office/Regional Office deliberations.

1.4 Purpose of This Report

The purpose of this report is to briefly describe the indifference-scaled factor profile technique (its proper location in the Forest Service planning process, its strengths and weaknesses, and the procedures followed in applying the technique), and to document the experience of the Region 2 planning staff in applying the technique in an actual regional planning problem.

2.0 THE FACTOR PROFILE TECHNIQUE

2.1 "Alternatives" in the Planning Process

The factor profile technique is designed to facilitate the comparison and evaluation or trade-offs between alternatives of courses of action so that a preferred alternative can be identified and documentation proivided supporting that decision. Accordingly, the indifference-scaled factor profile technique is most directly concerned with those sections of the draft National Forest Management Act forest planning regulations dealing with the comparison of alternatives and the selection of a preferred alternative. However, the technique also produces information useful in the formulation of alternatives and in the identification of those factors most critical in the evaluation of alternatives.

2.2 Philosophy

The planning philosophy underwhich the factor profile technique was designed makes a number of assumptions about what a planning and evaluation methodology should look like. These

can be summarized as follows:

1. All decisions are value-laden; people, including resources planners and decision makers, make decisions in light of their own sets of values and preferences; this means that values and viewpoints should enter the decisionmaking process and should be explicitly displayed;

2. Decisions should be made on the basis of differences and trade-offs between alternatives; techniques which mask these differences and trade-offs (such as index weighting techniques) lose information and should be avoided;

3. Monetary values should not be assigned too early in the decisionmaking process, especially when the basis for assigning these values is not well-founded; this activity might also lose information;

4. Techniques should be used which avoid "double counting" in comparing alternatives and evaluating trade-offs; for example, significant trade-offs might occur between two alternatives in terms of water quality and recreation; the impact or importance of the water quality concern should not be given undue weight by expressing the water quality trade-offs in terms of a number of water quality parameters (such as BOD, suspended solids, salinity, nutrients, etc.) unless those parameters are each important individually and changes in them are caused by different management mechanisms; and

5. Techniques should not overlook important factors and should not add to the information overload problems generally encountered in complex resources planning studies.

2.3 Factors

2.3.1 Definition

A factor is an important output, impact, or effect of an alternative which could be used in comparing alternatives and in expressing differences and trade-offs between alternatives. Factors can be economic, social, or environmental in nature. In

wildland planning, examples of common factors might be timber volume, user-days of developed or dispersed recreation produced, amounts of grazing made availabe, amount of wilderness and roadless area provided, net cost of the plan to the public, etc.

2.3.2 Types of Factors

There are three types or categories of factors which planners must deal with in any planning study that is at all complex. These categories of factors have been called "priceable," "quantifiable," and "ill-quantifiable."

2.3.2.1 Priceable Factors

Those factors that are directly priceable in the market are the "priceable" factors. The appropriate techniques of measurement and analysis of these factors derive from economic analysis as defined in its narrowest sense. Priceable factors are thus things that one would be able to purchase in the market place.

2.3.2.2 Quantifiable and Ill-Quantifiable Factors

Factors which are not directly priceable in the market, but which are measurable are called "quantifiable" factors if they can pass the test of indifference. A factor is quantifiable if, when given equal amounts of the factor in two different alternatives, one would be indifferent between the alternatives, other things remaining equal.

For example, two different alternatives might each provide

100,000 acres of roadless area. In this case, the factor "acres of roadless area" is quantifiable if one is indifferent between the 100,000 acres in the first alternative and the 100,000 acres in the second. If the roadless areas are on the same land for both alternatives, or if the planner believes that the proposed roadless areas are very similar for both alternatives, then the factor "acres of roadless area" would probably be judged to be quantifiable. However, if the roadless area for the first alternative consisted of mountainous land with heavy timber, and the roadless area for the second alternative were located on pinon and sagebrush foothills, then the factor "acres of roadless area" would be judged to be ill-quantifiable. In other words, even though the amount of roadless area is measurable for both alternatives, since the actual acres are of a different type of land, the quantities are not directly comparable. Therefore, the factor "acres of roadless area" would in this case be ill-quantifiable.

2.4 Objectives of Using Factor Profiles

The objective of using the factor profile technique is to organize and integrate information about the priceable, quantifiable, and ill-quantifiable factors (as these factors describe various management alternatives) with preference and opinion data so that the comparison and evaluation process can arrive at a preferred alternative and a rank order of all alternatives. In doing this, the factor profile technique uses

explicit value judgments on the part of decision makers or reference publics to document the comparison/evaluation process.

2.5 A Priori Weighting Versus Factor Profiles

There is an important difference between the factor profile technique and a number of approaches presently in common useage in Forest Service planning. These techniques will be collectively referred to here as "a priori weighting" approaches.

Typically, the a priori weighting approach begins by asking the question, "Which factor is most important: timber volume or developed recreation user days?" Weights (that sometimes are constrained to sum to an arbitrary number of points, say 100) are then assigned to all the factors under consideration, and these are used to construct an index number for each alternative based on the various levels of the factors themselves. The point here is that a priori weighting techniques require people to make statements about values and preferences without even knowing what the differences and trade-offs between alternatives are. The question "Which factor is most important; timber volume or developed recreation user days?" is a non-sensical question unless one is comparing two alternatives with specific levels of timber volume and developed recreation user days. The question only makes sense when one is considering specific levels in, and differences between factors for two alternatives.

2.6 Example Application of the Factor Profile Technique

2.6.1 Introduction

The factor profile technique interprets information about the various factors (as these factors describe the management alternatives being considered) with preference and opinion data to arrive at a preferred alternative. In doing this, the factor profile technique uses explicit value judgments on the part of decision makers or public interest groups to document the comparison/evaluation process.

The major steps in using the technique are: (1) the organization of data about the various factors, (2) comparison of the alternatives and documentation of these comparisons, (3) and summarization of the comparisons in the form of a graphical display called a profile.

In the example that follows (this example has been adopted from one proposed in the RPA planning methodologies report developed by the Rocky Mountain Forest and Range Experiment Station), a hypothetical forest plan is being developed to address problems and concerns that have surfaced regarding dispersed recreation, wilderness, water yield, employment, wildlife habitat, and aesthetics. Four alternatives have been proposed by the planning staff:

1. Alternative A: This alternative is essentially a continuation of past management, with particular emphasis on maintaining past output levels of timber, forage, water, and recreation opportunities;

2. Alternative B: This alternative has a timber products theme, but includes consideration for other, resources, as well, especially range and recreation;

3. Alternative C: This alternative has a preservation and recreation theme, but allows for timber harvest, livestock grazing, and other commodity outputs; and

4. Alternative D: This alternative has a water-forage theme, but allows for timber harvest, some recreation, and other outputs.

These alternatives can be characterized in terms of their output levels for the following factors:

1. Net benefit ($);

2. Hiking and backpacking trails (miles);

3. Wilderness acreage (MAC);

4. Employment affected (annual full-time equivalents);

5. Water yield (MAF);

6. Albert squirrel habitat (wildlife habitat index, 10 point scale); and,

7. Scenic beauty, close-up vantge (scenic beauty index, 10-point scale).

2.6.2 Data Organization

2.6.2.1 Summary Table

The first step in the process is the organization of the data. For priceable and quantifiable factors, a tabular summary of the output levels of all factors for all alternatives is useful. Such a summary is presented in Table 1.

2.6.2.2 Comparative Descriptions

Table 1. Description of the Alternative by Factors

Alternatives	Factors						
	1. Net Benefit ($M)	2. Hiking/ Backpacking Trails (miles)	3. Wilderness Acreage (MAC)	4. Employment Affected (annual full time equiv)	5. Water Yield (MAF)	6. Albert Squirrel Habitat (10-point scale)	7. Scenic Beauty Close-up Vantage (10-point scale)
A.	0	55	38.5	589	48.0	7	8
B.	463	42	38.5	706	48.5	5	6
C.	-300	135	83.0	576	48.0	7	8
D.	950	42	38.5	798	49.0	2	4

Though not used in this example, ill-quantifiable factors are used in the decisionmaking process and a simple technique, called comparative descriptions, has been proposed to deal with this kind of factor. This technique utilizes a tabular display format in which:

1. Each ill-quantifiable factor is precisely and thoroughly described for each alternative;

2. If the factor is the same for two or more alternatives, the description is written only once, if possible, so the reader can see instantly that the alternatives are alike. If the description must be written twice, examply the same words are used, or it is indicated that, for example, Alternative C is the "same as A" for that factor; and,

3. The comparative descriptions for the alternatives are arranged in close proximity to each other so that it is visually easy to make comparisons between alternatives.

In this manner, all relevant information about the ill-quantifiable factors gets into the planning process.

2.6.2.3 Rank Order Alternatives for Each Factor

To further organize the data and facilitate pair-wise comparisons of the alternatives, the data in the summary table (Table 1) must be translated into a rank-ordering of alternatives for each factor, as illustrated in Table 2. The alternative having the most preferred output level is entered in the top box along with the output level itself. The other alternatives are entered vertically according to their preference ordering. Priceable, quantifiable and ill-quantifiable factors are rank-ordered in this manner.

Table 2. Rank Order of the Alternative for Each Factor

Factors						
1. Net Benefit ($M)	2. Hiking/ Backpacking Trails (miles)	3. Wilderness Acreage (MAC)	4. Employment Affected (annual full time equiv)	5. Water Yield (MAF)	6. Albert Squirrel Habitat (10-point scale)	7. Scenic Beauty Close-up Vantage (10-point scale)
D +950	C 135	C 83.0	D 798	D 49.0	A,C 7	A,C 8
B +463	A 55	A,B,D 38.5	B 706	B 48.5		
A 0	B,D 42		A 589	A,C 48.0	B 5	B 6
C -300			C 576		D 2	D 4

A question that should be asked at this point is, "Are there any of the alternatives that are clearly dominant or dominated?" If an alternative were dominant over all the others, then it would show up in all of the boxes of the top row in Table 2. If a clearly dominant alternative is found, the process could stop here. If a clearly dominated alternative is discovered, it can be eliminated from further consideration at this point.

2.6.3 Comparison of the Alternatives

Four steps are followed in comparing alternatives using the factor profile procedure:

1. Two alternatives are selected to compare and, using the data in Table 2, the two-Alternative Comparison Table is filled out, as illustrated for two example alternatives in Table 3. The table is completed by indicating the differences in the factors for the two alternatives in the bottom row. Note that no indication is given as to which alternative is attached to which output levels for the various factors. This is done to help insure that the participants in the process examine only the real trade-offs between alternatives without reference to which output level belongs to which alternative.

2. The differences in the factors between the two alternatives are examined and the decision maker then determines which difference (not factor) is the most important in comparing the alternatives and deciding which alternative he most prefers.

3. The factor difference judged most important in the previous step is placed at the "100" position on the scale as illustrated in Figure 1. In the column labled "FACTOR DIFFERENCES," it is indicated which factor difference this is. In the column entitled "EXPLANATION OF WEIGHTS," the decision maker explains why this is the most important difference.

The next step in doing the indifference scaling is to decide how important the remaining factor differences are relative to the most important difference. To do this, the next factor difference in the comparison table is

Table B. Two-Alternative Display Format

Name: Joe Ranger

Comparison of Alternatives A and B

	Factors						
	1. Net Benefit ($1000)	2. Hiking/ Backpacking (miles of trails)	3. Wilderness Acreage (1000 acres)	4. Pineville employment affected (annual full time equiv)	5. Water Yield to Metro City (1000 ac-ft)	6. Albert Squirrel habitat (10-point scale)	7. Scenic Beauty Close-up Vantage (10-point scale)
Current Outputs	0	55	38.5	589	48.0	7	8
	463	55	38.5	706	48.5	7	8
	0	42		589	48.0	5	6
Differences	463	13	0	117	0.5	2	2

Figure 1. Indifference Scaling Procedure and Documentation

Name: Joe Ranger

Comparisons of Alternatives A and B

Scale	Factor Differences	Explanation of Weights
100	* Employment	The employment difference in by far the most important because of increased local income, added community stability and important positive social impacts that additional employment fosters
75		
50		
40	* Scenic Beauty	A decrease in scenic beauty would be unfortunate, especially in a forest with the potential of this one. However, the difference in employment levels is substantially more important
30	* Net Benefit	I estimate that the difference in net benefit is worth only 30% of the total social and economic good that would derive from the employment difference
25		
15	* Hiking/Backpacking	A loss of 13 miles of trails would only slightly complicate shortage problem.
10	* Water Yield	A 500 acre-feet difference in water supply is insignificant compared to an employment difference of 117 jobs.
5	* Squirrel Habitat	A substantial increase in employment is far more important than a slight decrease in Albert squirrel habitat
0	* Wilderness	There is no difference between the alternatives in wilderness area

selected and placed on the scale according to how important this factor difference is in relation to the most important difference. This judgment should be made by considering the actual differences between the factors for the two alternatives and the values of the factors themselves.

For example, if employment is judged as the most important factor difference, and the difference in scenic beauty is 40 percent as important as the employment difference, then the factor difference "scenic beauty" would be placed opposite "40" on the scale. Also, the reasons for this judgment are stated in the explanation column.

4. After all factor differences have been placed on the scale, the final step is to check the completed scale to be sure that each factor difference is positioned in relation to all other differences according to the decision makers actual preferences.

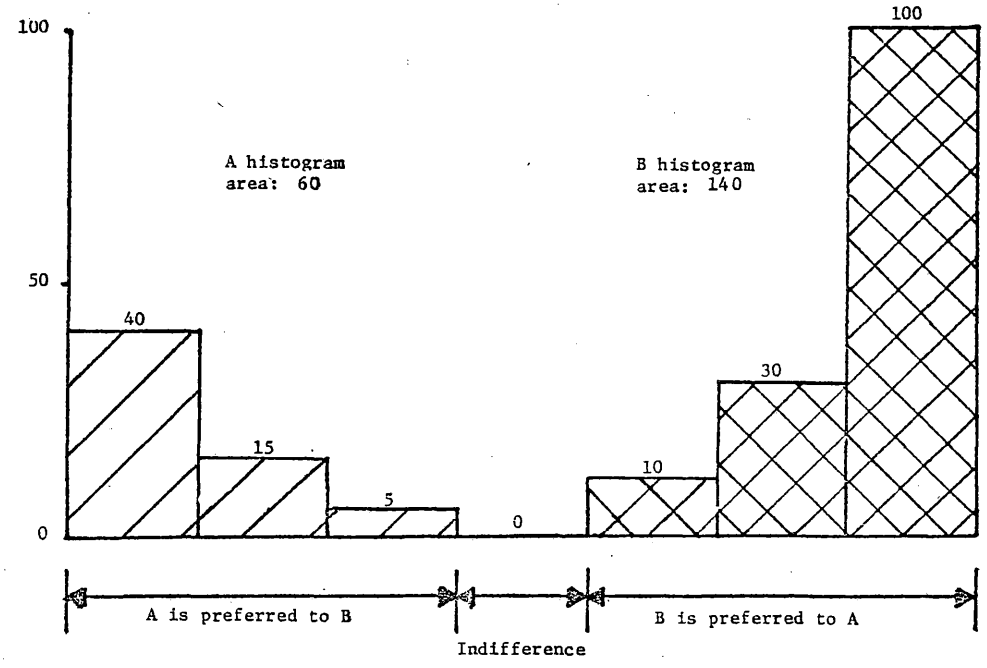
It should be noted that if the factor profile procedure as described above is applied by a group rather than a single decision maker, a group concensus should be obtained at each step in the process. If this is not possible, minority opinions can be documented and reported.

2.6.4 Factor Profile

The judgments made about the trade-offs between the two alternative can be illustrated graphically in the form of an indifference-scaled factor profile. The profile illustrated in Figure 2, is constructed by going down the scale in Figure 1 and recording factor differences and their scaled importance values in the table in Figure 2. Going from top to bottom on the scale in Figure 1, if the first alternative is superior to the second for a given factor, then the factor difference and its scaled value are entered in the left-most column of the table. If the second alternative is superior for this factor, then the

Figure 2. Indifference-Scaled Factor Profile
Comparing Alternatives A and B

	Factors						
	7 Scenic Beauty-Close-up Vantage (10-point scale)	2 Hiking/ Backpacking (miles of trails)	6 Albert squirrel habitat (10-point scale)	3 Wilderness Acreage (1000 acres)	5 Water Yield to Metro City (1000 ac-ft)	1 Net Benefit ($1000)	4 Pineville employment affected (annual full time equiv.)
Differences	A > B 2	A > B 13	A > B 2	A = B 0	B > A 0.5	B > A 463	B > A 117
Scale Values	40	15	5	0	10	30	100



information is entered in the right-most column. As one goes down the scale in Figure 1, the columns in Figure 2 will gradually fill. When it is complete, the indifference-scaled profile can be drawn on the graph, as illustrated in Figure 2.

After the scaled values have been plotted, the preferred alternative can be identified by examining the total histogram area for the two alternatives. The alternative with the largest histogram area is theoretically the preferred alternative. If the decision maker is not satisfied with the picture presented in the histogram profile, he should go back and re-think the process. If the profile is accurate, the process of comparing alternatives is continued using the preferred alternative of this comparison and another alternative that has not yet been examined.

3.0 THE REGION 2 APPLICATION OF THE FACTOR PROFILE TECHNIQUE

3.1 Purpose of the Regional Application

In formulating the National Direction for the 1980 RPA update, the Washington Office (WO) assigned tentative targets to each region for five alternatives. The Regional Office (RO) responded to the initial targets and in some cases suggested other output levels. Different output and activity levels are associated with each alternative program. The indifference-scaled factor profile technique was used to evaluate and compare the ten alternatives and to document the rationale for selecting the Region's preferred position.

3.2 Alternatives

The two sets of alternatives (R-1 through R-5 for RO alternatives, W-1 through W-5 for WO alternatives) can be characterized in terms of their market and non-market output levels. In the materials which follow, high market or non-market output levels are the maximum that could be produced or supported in light of constraints other than Federal funding,

current levels are what would be produced and supported under the current level of Federal support, allowing individual output or activity to vary, and low levels are the minimum necessary to maintain the existence of a particular program:

1. Alternatives R-1 and W-1: Forest Service programs would provide for both high-level market and non-market outputs on National Forest System, State, and private forest lands;

2. Alternatives R-2 and W-2: Forest Service programs would provide both low-level market and non-market outputs on National Forest System, State, and private forest lands;

3. Alternatives R-3 and W-3: Forest Service programs would provide moderate-level market and non-market outputs on National Forest System, State, and private forest lands;

4. Alternatives R-4 and W-4: Forest Service programs would provide low-level market and high-level non-market outputs on National Forest System lands and high-level outputs on State and private forest lands; and

5. Alternatives R-5 and W-5: Forest Service programs would provide moderate-level market and low-level non-market outputs on National Forest System lands and low-level outputs on State and private forest lands.

3.3 Factors

Each alternative can be viewed as a package of "goods" or factors. Choosing between them can be compared to choosing between several grocery carts of different but overlapping goods. In doing this, the factor profile technique uses explicit value judgments to document the comparison/evaluation process.

Each alternative may be better understood by looking at the factors involved. As indicated previously, a factor is anything that could be important in describing the effects and impacts of

an alternative, in comparing alternatives, and in identifying trade-offs between alternatives. After several iterations, the Executive Group and the technical staff identified twelve factors or program elements that they felt were the most significant to the region in assessing the alternatives. Several meetings and discussions were required to reduce the original thirty-one element list identified by the WO to the final twelve. A listing of the twelve factors follows.

1. Factor 1: Developed Recreation. Recreation use of:

   a. Camp, picnic, swiming, boating, etc., sites operated by the Forest Service;

   b. Concessionier-operated winter sports sites; and

   c. Other concessionier-operated sites; measured in millions of Recreation Visitor Days (MMRVD).

2. Factor 2: Dispersed Recreation. Nonmotorized, off-highway or "primitive" motorized, and highway or "concentrated" motorized recreation use; measured in millions of Recreation Visitor Days (MMRVD).

3. Factor 3: Wilderness Management and Maintenance. The number of acres of NFS lands designated as part of the National Wilderness Presevation System; measured in millions of acres (MMAC).

4. Factor 4: Urban and Community Forest. The number of communities assisted in urban and community forestry-related activities, such as species selection for planting, renovation of old urban forests, etc. (number of projects).

5. Factor 5: Grazing Range. Domestic livestock grazing on NFS lands; measured in millions of Animal Unit Months, (MMAUM); one AUM is the amount of forage necessary to feed one animal unit (1000 lb. cow) for one month; approximately 800 pounds of dry forage.

6. Factor 6: Sawtimber Offering. Timber offered for sale which is greater than eight inches in diameter;

measured in millions of board feet (MMBF).

7. Factor 7: Timber Production, Non-Industrial Forest Lands. Increased timber production resulting from technical assistance and cost sharing in S&PF programs (MMBF).

8. Factor 8: Road Construction/Reconstruction (Arterial and Collector). Principally, miles of arterial and collector roads reconstructed (miles).

9. Factor 9: Total Employment: The total amount of employment provided by use of NFS lands; measured in person-years.

10. Factor 10: Water Yield-Minimum Standard. The amount of water yield from the NFS lands meeting minimum water quality standards; measured in millions of acre-feet (MMAF).

11. Factor 11: Improved Watershed Conditions (Additional Acres, NFS). Number of acres for which water shed conditions can be improved. Measured in thousands of acres (MAC).

12. Factor 12: Wildlife Habitat Improvement. Acres of National Forest land treated for the benefit of big game, small game, and non-game species. Measured in thousands of acres (MAC).

3.4 Goal Statements

Factors provide a means for assessing how well an alternative addressed the goal statements developed for each alternative. By comparing the factor outputs with the goal statements for that factor, the alternative best fulfilling that goal can be determined. The goal statements are summarized by alternative in Appendix A.

3.5 Issues

Factors also provide a means for assessing how well an alternative addresses the significant issues in the region. An

issue is defined as: (1) an unsettled matter for which there exists an important trade-off between two or more factors. that (2) is in dispute between two or more parties. that (3) could lead to a loss or delay in accomplishment of planned Forest Service goals and objectives, and that (4) requires a decision.

Through involvement of the general public, interest groups, research agencies, state government personnel, and Forest Service personnel, fifteen major regional issues were identified. The relationship between these issues and the factors chosen as significant to the region is shown in Table 4. Appendix B contains a detailed description of the fifteen issues.

3.6 The Region 2 Results

In comparing and evaluating the Washington and Regional Offices targets for each alternative, the Regional Forester and the Deputies compared the RO targets for Alternative 1 with those established by the Washington Office. Output levels were evaluated for a particular alternative according to how well they meet the goal statement developed for that alternative and how well the outputs fulfill the personal management philosophies of the Executive Group. Further, using professional judgment, the Executive group determined which output levels were "best buys" for the region and the nation. (The targets were not labeled by alternative in an attempt to eliminate bias for RO targets.) Each member of the group placed the factor differences he judged to be the most important at the 100 position on the scale and

Table 4. Relationship Between Factors and Issues

Issues \ Factors	Developed Recreation	Dispersed Recreation	Wilderness Mgmt. & Maint.	Urban & Community Forestry	Grazing Range	Sawtimber Offering	Timber prod. non-industrial forest	Road Const. Reconstruction (Act. & Coll.)	Total Employment	Water Yield Minimum Standard	Improved Watershed conditions (Add. access)	Wildlife Habitat Improvement
Wilderness	X	X	X		X	X		X	X	X	X	X
Deer Habitat & Herd Size	X	X			X	X	X	X	X		X	X
Elk Habitat & Herd Size	X	X			X	X	X	X	X		X	X
Grizzly Habitat & Population	X	X	X		X	X	X	X				X
Water		X			X	X	X	X	X	X	X	X
Roads	X	X	X		X	X	X	X	X	X	X	X
Downhill Skiing	X		X		X	X			X	X		X
Dev'd Rec. Facilities	X	X	X						X			X
Tree Management	X	X		X	X	X	X	X	X	X	X	X
Mountain Pine Beetle					X	X			X			
Urban Forestry				X								
Coop Fire Program												
Mineral Development		X	X		X				X	X		X
Objectives of Grassland Mgmt.	X	X	X		X				X			X

then decided how important the other factor differences were relative to the most important difference. These were also placed on the scale. It was assumed that the members of the group were indifferent to factor differences with a score less than 50 on the 100 point scale. That is, either the WO or RO target was acceptable. Each participant then explained his rationale for the scores assigned to the factor differences and a consensus was obtained for a composite score. The rationale for the final scale value was then reviewed and recorded. The same process was followed for Alternatives 2 through 5.

The actual scale value finally arrived upon was incidental to the rationale defining the factor difference as being an important difference. A scale value greater than 50 was viewed as an arbitrary designation simply indicating one difference was somewhat more important than another. It was observed that almost perfect information would be necessary to assign truly meaningful scale values. Those assigned by these participants should be viewed as indications of preference and magnitude rather than as true measures.

The decisions made by the Executive Group and the supporting rationale as documented in the factor profile process were summarized by the Regional Planning staff in preparation for negotiations with the Washington Office for the final set of five Regional alternatives. In all cases, the Executive Group found the RO alternative to be superior to the WO alternative. However, while the RO alternatives were considered superior,

there were some factors for which the WO alternatives were better than the RO alternatives. Where feasible, these were adopted in the RO alternatives, thus producing new alternatives that were better on the whole than either of the original RO or WO alternatives. In documenting this fact, the Regional Planning staff used the output of the factor profile process to construct brief descriptions of the major factor differences between alternatives. A listing of the executive group's reasoning for these changes was also documented. This documentation took the form of a page per factor difference per alternative for those differences that were judged to be significant. Each of these one-page summaries contained a description of current output levels for the factor, the proposed 1980 and 1995 RO and WO output levels, the preferred Regional position, and a listing of the rationale for that position. An example of this documentation is given in Figure 3.

These one-page factor difference discussions were further summarized by the regional planning staff in the Region's submission to the WO. The text of this summary is included in Appendix C.

3.7 Additional Benefits of the Factor Profile Technique

The indifference-scaled factor profile technique provided benefits other than just the identification of important differences between the RO and WO alternative programs and preferred positions on these differences.

Figure 3: Alternative I
Rationale

DISPERSED RECREATION

I OUTPUT

II STATUS

MMRVD	
14.7	Current output 1977 attainment report
17.22-18.18	1980 Regional Goals and Objectives (Level II and III)
19	WO 1995 Tentative target
30	RO 1995 May 1 RPA Submission

III DECISION

PREFERRED REGIONAL POSITION
30 million recreation visitor days in 1995

IV RATIONALE

* A simple linear expansion of current recreation trends results in 28 MMRVD by 1995.

* The WO level is too low even if energy prices increase sharply since local residents would recreate in local Forests rather than travel outside the Region as many do now.

* Population increase resulting from energy development in the Region will also increase recreation use in the Region.

* If increasing energy prices curtail traditional modes of access to Forest lands, alternative methods such as mass transit will still provide adequate access.

* The WO level appears to be allocated among the Regions according to their "fair share" based on historical trends. Such an allocation ignores changing demand levels among the Regions.

In the process of discussing the factors and their differences in order to arrive at a consensus scale value, the members of the Executive Group developed a clear and consistent understanding of each factor. It was discovered that there were some subtle misconceptions concerning some of the factors and that these would have altered preference scaling had they not been eliminated through discussing the factors and their differences.

The format of the meeting (with each participant scaling those factor differences most significant to him and then defending the resultant preference ordering) provided an excellent discussion forum. The discussion caused each member of the Executive Group to evaluate his preference ordering according to the goal statements for each alternative, the significant regional issues, and his personal management philosophy.

A major benefit of the process was that each participant arrived at a preferred position without having the decision process obscured through mathematical manipulations. The decision process was clearly displayed; this allowed members of the group to check for consistency in their final rankings.

Possibly the most important benefit provided by the factor profile technique was that the rationale for the final group factor difference scaling was documented. The resulting summary of the group's feelings and opinions was then available for use

in developing five final alternatives in conjunction with the Washington Office.

The Executive Group employed the factor profile technique to identify significant decision areas or areas of disagreement between the RO and WO alternative programs. Since they did not determine a preferred alternative, it was not necessary to draw histogram profiles of the alternatives. The histogram profiles will be valuable decisionmaking aids when the Region must finally choose between the five alternatived programs developed from negotiations with the WO.

Finally, the application of the indifference-scaled factor profile technique with the Executive Group gave these decisionmakers a common knowledge of real resource constraints and interactions. This in turn provided them with a more definitive picture of which of their decisions were most critical for the region.

4.0 IMPLICATIONS FOR PUBLIC INVOLVEMENT

Through application of the indifference-scaled factor profile technique in the Region 2 planning process, the technique has been streamlined and simplified. It seems possible now that interest groups and the general public could be addressed with the technique without the process becoming overly time consuming.

4.1 Information Requirements

The technique is easily understood and can be used by people who do not have a great deal of technical knowledge of Forest management. It would be wise, however, for a few members of the technical staff to attend meetings where the technique is used to make initial presentations on management philosophies, congressionally mandated procedures, and feasibilities. These staff-persons would then be available to provide additional information as requested by the participants.

4.2 Factor Selection

Depending on the public groups, it is advisable to allow

them to define the factors they feel are significant to the Region. The RO can suggest those it considered most important, but should remain flexible enough to allow public input in determining the final set of factors to be used in the indifference scaling process. In order to avoid an information overload problem, the number of factors chosen for consideration should be kept at a minimum, preferably fewer than twelve.

4.3 Application of the Technique

4.3.1 Small Groups

It is possible for small groups to arrive at a consensus concerning final scale orderings. However, even in small groups there are substantial decisionmaking costs in the form of argument, effort, mental strain, and opportunity costs. In order to minimize these decisionmaking costs, it is recommended that groups be kept quite small or that persons complete the alternative comparisons individually and that a composite preference ordering be determined by a statistical procedure such as unfolding analysis. (Coombes, C.H. A Theory of psychological scaling. Engng, Res. Bull. No. 34 Ann Arbor: Univ. Michigan Press, 1964. Coombs, C.H. A theory of Data. New York; Wiley, 1964. Poole, Keith. A method for Testing the Equilibrium Theories of the Spatial Model of Party Competition. unpub. doctoral dissertation University of Rochester. New York. 1978). The small groups of individuals could discuss these initial orderings before the whole group in order to obtain additional

input, avoid misconceptions, verify definitions, and explain rationale before assigning final scale values.

Used in this manner, the factor profile technique would provide valuable public input to resource managers and also educate the public to trade-offs, interrelationships, and management philosophies in the National Forests.

4.3.2 Questionnaire Approaches

Further simplifications in the factor profile procedures which are presently being tested elsewhere might make the methogology simple enough to be applied via mailed questionnaire. If these simplifications can be successfully made, then it would be possible to obtain a statistically accurate random sample of the values and opinions of an entire populace. This could provide substantially more public opinion data to the natural resources decision maker than he could obtain through applying the factor profile technique only on the vocal and politically active interest groups.

5.0 SUMMARY

The indifference-scaled factor profile technique was originally designed principally as a method to provide better documentation of the decisionmaking process. The technique is viewed as a significant decision aid to be used in the evaluation of alternatives and the selection of a preferred alternative. It is intended to be consistent with the draft forest planning regulations of the National Forest Management Act.

An application of the technique on the RO and WO alternatives for the regional plan was made by both the regional planning staff and the Executive Group. These applications showed the factor profile technique to be: (1) a significant tool in the identification of important factors in terms of which alternatives can be evaluated; (2) an efficient means of identifying major trade-offs between alternatives; (3) a useful technique for evaluating alternatives in terms of their trade-offs; (4) a systematic means for eliciting and documenting decision makers' values and opinions concerning trade-offs between alternatives; (5) a means of identifying areas where alternatives could be modified and improved; (6) a procedure for

giving decision makers a common understanding of resource constraints and interactions.

The factor profile technique has limitations. For example, it works best in a group setting only if the members of the group share common objectives, planning philosophies, etc., and are used to working go together as a management team. The technique works less well with a group of individuals who are not experienced in working together. The technique in its present form also requires a fairly substantial time investment in familiarizing the members of the group with the procedures involved. Another time investment is required in making available to the group resource personnel from the planning team to provide background information and other assistance.

APPENDIX A

GOAL STATEMENTS FOR THE FIVE PROPOSED REGIONAL ALTERNATIVES

ALTERNATIVES R1 and W1

Forest Service programs would provide for both high-level market and non-market outputs on National Forest System, State, and private forest lands. The goal statements for Alternative I are as follows:

General

Provide for higher outputs, in all areas, than the 1975 Recommended Program

Outdoor Recreation

Provide for an increased relative national share of use and full range of outdoor recreation opportunities on National Forest System lands.

Emphasize dispersed recreation use outside designated Wilderness areas.

Encourage private investments in group use facilities on National Forest System lands.

Increased development of intensive use sites on National Forest System lands near urban areas.

Develop and use scientific knowledge to quantify demands, trends, and environmental impacts of recreation and visual resource uses and values.

Provide visitor information programs and facilities that demonstrate resource interactions and multiple-use management opportunities.

Share leadership for cooperative planning and technical assistance to outdoor recreation programs on other public and private sector lands adjacent to Natonal Forest System lands.

Wilderness

Complete review of potential Wilderness on National Forest System lands, and recommend new areas that minimize conflict with potential non-Wilderness needs.

Provide for substantiall increased use and a variety of experiences in under-utilized Wilderness areas.

Coordinate recommended Wilderness designation and management planning with other agencies to achieve better geographic distribution.

Develop scientific knowledge for intensive Wilderness management with emphasis on ecology, protection, and social needs.

Wildlife and Fish

Provide for high-population levels of wildlife and fish through planning and intensive coordination of habitat manipulation with other resource activities.

Remove barriers to passage of anadromous fish over National Forest System land.

Develop and aply a wide variety of scientific knowledge and technology that would provide for higher ouality wildlife and fish habitat.

Provide intensive management to improve habitat for threatened and endangered species on National Forest System lands.

Provide cooperative and technical assistance to private landowners through State foresters or other appropriate officials for increased wildlife production on forested lands.

Develop scientific knowledge and apply a wide variety of new technology to provide for higher quality wildlife and fish habitat.

Range

Provide forage to increase livestock feed from forest and range without impairing land productivity.

Extend, with other agencies and indirectly with the private sector, cooperative and technical assistance on forested range.

Develop and apply scientific knowledge and new technology that increases forage production and improves utilization.

Timber

Increase the quantity and quality of all forest products and supplies to meet projected increases in demand at stable relative prices.

Emphasize practices that will improve utilization of wood fiber, including its use as a supplemental source of energy.

Concentrate intensive management practices on best sites and on timber species and products with greatest potential demand.

Provide a full range of cooperative and technical assistance programs to private forest landowners, processors, and users to improve timber growth, protection, and utilization.

Develop and use new scientific knowledge and technology to improve processing, protection, growth, and utilization.

Water

Intensively protect and maintain watershed conditions to assure good water quality.

Coordinate and assure planning uniformity of water quality and quantity through assistance, cooperation, and involvement with other Federal, State, and local organizations responsible for water.

Develop and apply new scientific knowledge to management opportunities that will maintain or improve water

quality.

Minerals

Initiate and provide for coordination of mineral extraction activities by fully integrating them with other resource plans and needs on National Forest System lands.

Restore mined land on National Forest System lands and provide technical assistance for planning, and for mitigation of adverse mineral development effects on forested private sector land.

Develop and implement scientific knowledge to minimize environmentl damage from mineral extraction.

Human and Community Development

Reduce the present level of involvement in human and community development programs.

Encourage and assist other sectors of the economy to provide special employment opportunities.

Develop scientific knowledge and cooperatively implement technology which protects and enhances open space environments and quality forested areas in urban and community areas.

Maintain employment and training program capability.

Protection

Intensify protection support activities including insect and disease control, fire protection, and law enforcement.

Lands

Increase and intensify land management planning support activities.

Soils

Intensively integrate soils support information in resource management to improve and maintain soil productivity.

Facilities

Develop new approaches to transportation and communications systems to support resuorce goals.

Develop and upgrade all types of base facilities to support high-level resource outputs.

ALTERNATIVES
R2 and W2

Forest Service Programs would provide both low-level market and non-market outputs on National Forest System, State, and private forest lands. The goal statements for Alternative II are as follows:

General

Provide for a decreased relative national share of use and a limited range of outdoor recreation activities on National Forest System lands.

Direct outdoor recreation use and activities on National Forest System to lands that require minimum administration and protection.

Provide for private sector investment and development of outdoor recreation opportunities on National Forest System land for new develoment.

Maintain existing developments on National Forest lands near urban areas, primarily for protection of the forest.

Develop scientific knowledge in environmental protection and human behavorial characteristics.

Provide visitor information that stresses environmental protection needs.

Participate in cooperative planning and technical assistance programs only as a part of a request for overall land management assistance.

Wilderness

Maintain and protect existing classified Wilderness on National Forest System lands.

Permit Wilderness use at levels consistent with the environment's natural sustaining capability, and in areas needing only minimum management.

Recommend new Wilderness only to improve geographic distribution or to include different major ecosystems.

Develop scientific knowledge to better understand the natural processes that affect Wilderness.

Wildlife and Fish

Manage and protect varieties of wildlife and fish for natural ecological balance through cooperation with other Federal and State agencies.

Protect spawning areas of anadromous fisheries on National Forest System lands.

Apply present scientific knowledge to protect and maintain threatened and endangered species habitats.

Maintain existing habitat improvements for threatened and endangered species.

Continue existing level of cooperative programs and planning efforts with appropriate State and Federal agencies.

Range

Provide forage on National Forest System lands within existing capacity of range and where it can be sustained without additional investment.

Maintain cooperation with other Federal, State, and private forested range owners to efficiently develop opportunities for needed forage production.

Focus scientific knowledge and technology on ecosystems protection and its relationship to forage production.

Timber

Provide Forest Service timber programs and supply at less than current levels.

Maintain utilization standards in wood processing and encourage use of timber and wood waste as a supplemental energy source.

Intensively manage National Forest System timber, primarily for sawtimber, on the highest production potential sites.

Continue technical assistance, protection, and cooperative programs to forest landowners, processors, and users at less than current levels; and place greater reliance on private business and educational institutions to meet assistance needs.

Maintain and use current scientific knowledge and technology to improve processing, protection, growth potential, and utilization.

Water

Meet minimum water quality standards.

Maintain cooperative efforts with other Federal, State, and local water agencies.

Direct scientific knowledge toward reducing water pollution.

Minerals

Restore mined lands on National Forest System land where adverse environmental consequences might occur.

Cooperatively plan with other agencies and the private sector to minimize adverse mining impacts on private lands that could affect National Forest System lands.

Implement existing scientific knowledge to minimize environmental damage from mineral extraction.

Human and Community Development

Maintain current level involvement in human and community development programs.

Emphasize employment program for protecting and maintaining National Forest System lands and resources.

Use cooperative employment programs and existing scientific knowledge and technology on open space environment in urban and community areas.

Maintain employment training programs.

Protection

Provide support for a low activity level in insect and disease control, fire protection, and law enforcement oriented toward minimum protection of watershed, facility, and community values.

Lands

Provide support of or minimum maintenance of land management planning, special land use administration, landownership adjustment, and multi-resource inventories.

Soils

Provide soils support that provides for basic protection and maintenance of soil productivity to prevent regression of watershed conditions.

Facilities

transportation, communication, and structural facilities needed for basic protection of forest land resources.

ALTERNATIVES
R3 and W3

Forest Service program would provide moderate-level market and non-market outputs on National Forest System, State, and private forest lands. The goal statements for Alternative III are as follows:

General

Provide for continuation of the 1975 Recommended RPA Program.

Outdoor Recreation

Continue providing for current proportionate share of developed site use on National Forest System lands.

Increase the relative national share of outdoor recreation opportunities and services through programs that emphasize dispersed recreation.

Increase development of facilities to support dispersed outdoor recreation.

Encourage private sector investment and operation of public recreational facilities on and adjacent to and compatible with National Forest System management.

Provide and maintain recreation facilities on National Forest System land near urban and high-use areas only where private sector or other authorities are unable to meet recreation demand.

Develop scientific knowledge to understand social needs, demands, trends, and environmental factors and to protect recreation and visual resource values.

Use visitor information programs and facilities to emphasize dispersed outdoor recreation opportunities.

Participate in cooperative planning programs and provide technical assistance to State and local governments that focus on non-income producing types of recreation.

Wilderness

Complete review of potential Wilderness on National Forest System lands and recommend a moderate increase of high quality classified Wilderness from them.

Maintain high quality Wilderness through improved management, including rationing and increased regulations in fragile and high-use areas.

Coordinate recommended Wilderness designation and management planning with other agencies to achieve geographic distribution and representation of typical ecosystems.

Develop scientific knowledge for Wilderness administration with emphasis on social needs, ecological processes, protection, and achievement of greater dispersal of use.

Wildlife and Fish

Provide for increased population levels and species diversity of wildlife and fish through intensive habitat management.

Remove barriers to passage of anadromous fish over National Forest System lands.

Develop scientific knowledge that provides methods to achieve species diversity and to take advantage of opportunities which improve wildlife and fish habitat.

Develop management strategies for use of other resources that are compatible with threatened and endangered species habitat requirements.

Provide a full range of cooperative and technical assistance to other Federal and appropriate State officials to improve coordination and management of fish and wildlife habitat.

Range

Provide forage to the extent benefits are commensurate with costs without impairing land productivity and within the constraints of regional social needs.

Provide cooperative and technical assistance to other agencies and work indirectly with private forested range owners to validate management strategies to reduce impacts of livestock grazing, and to improve grazing and wildlife habitat conditions.

Develop new scientific knowledge that would help minimize conflicts between domestic livestock and recreational use.

Timber

Intensify management on the most productive sites to provide a moderate increase in timber supplies on National Forest System lands to the extent that benefits are commensurate with costs.

Emphasize programs that will extend timber supply through improved protection, increased utilization of wood fiber and recycling technology.

Manage National Forest System timber for a full variety of wood products, including fuel to supplement the Nation's energy needs.

Intensify emphasis in cooperative and technical assistance programs to increase timber utilization and growth on private land.

Develop and use new scientific knowledge and technology to improve methods of protection, management practices, utilization, and marketing.

Water

Selectively improve water quality and supply commensurate with benefits.

Encourage coordinated planning and utilization of water through assistance, cooperation, and involvement with other Federal, State, and local organizations responsible for water.

Develop and use new scientific knowledge to improve water quality management opportunities.

Minerals

Initiate and provide for coordination of mineral extraction activities by fully integrating them with other resource plans, opportunities, and needs.

Provide technical assistance and cooperation to the private sector for mitigation of adverse environmental effects on forested lands.

Develop and implement scientific knowledge to minimize environmental damage from mineral extraction.

Human and Community Development

Increase emphasis on involvement in discrete human and community development efforts that complement activities in other Forest Service resource elements.

Provide a moderate level of employment opportunities for special groups such as youth, older Americans, and the disadvantaged.

Develop scientific knowledge and cooperatively implement technology which protects and maintains open space environment in urban and community forested areas.

Maintain cooperative employment training program capability.

Protection

Intensify protection support activities including insect and and disease control, fire protection, and law enforcement.

Lands

Increase support for activities that increase availability of land for resource production, accelerate the withdrawal process for energy production and provide full coordination with other resources in minimizing power transmission corridor impacts.

Soils

Develop comprehensive support programs that maintain soil productivity and monitor soil stability to prevent loss of watershed values through soil loss.

Facilities

Provide a moderate level of support to capital improvement and maintenance, applying new approaches to transportation and communication systems to meet resource system goals.

ALTERNATIVES
R4 and W4

Forest Service programs would provide low-level market and high-level non-market outputs on National Forest System lands and high-level outputs on State and private forest lands. The goal statements for Alternative IV are as follows:

General

Shift the burden of market outputs to the private sector, and produce higher non-market outputs on NFS land as compared to the 1975 Recommended Program.

Outdoor Recreation

Provide for a significantly increased relative national share of use and range of outdoor recreation opportunities on National Forest System lands.

Provide for increased dispersed outdoor recreation use outside designated Wilderness areas.

Encourage other Federal, State, and private investments for developed outdoor recreation sites on adjacent non-National Forest System lands.

Develop and maintain facilities that provide for dispersed outdoor recreation activities near urban areas.

Develop scientific knowledge of outdoor recreation values and social effects from dispersed use.

Provide visitor information services that promote understanding and safe use of the natural environment.

Promote cooperative and technical assistance programs on other public and private sector lands which focus on intensive use recreation development.

Widerness

Substantially increase Wilderness recommendations beyond those made by the 1975 Recommended Program.

Encourage and manage for increased use and variety of Wilderness experiences on National Forest System lands.

Recommend new Wilderness which will provide broad geographic distribution and optimum visitor accessibility.

Develop scientific knowledge for Wilderness administration, with emphasis on user satisfaction and preferences.

Wildlife and Fish

Provide for high population levels and species diversity through cooperative efforts with other State and Federal agencies.

Maintain anadromous fish habitat requirements on National Forest System lands.

Develop new scientific knowledge to improve wildlife and fish habitat with emphasis on nongame and threatened and endangered species.

Maintain natural ecological habitat succession for threatened and endangered species.

Maintain cooperative and technical assistance programs in areas where wildlife imbalances or special problems exist.

Range

Provide domestic forage on National Forest System lands where not in conflict with recreation or wildlife needs.

Emphasize cooperative and technical assistance programs with other agencies and work indirectly with the private sector on forested range.

Develop new scientific knowledge to maintain grazing use that does not conflict with recreation and natural values.

Timber

Reduce substantially the volume of timber offered for commercial sale from National Forest System lands.

Develop improved utilization programs that do not conflict with recreation and natural values on National Forest System lands.

Manage National Forest System timber for natural beauty, recreation, wildlife, and fish.

Increase timber supplies by providing new incentive and technical assistance programs and cooperative leadership to the State and private forestry sector.

Develop and maintain scientific knowledge and technology to improve utilization, protection, and management of timber.

Water

Manage water quality to enhance recreation experiences and maintain the natural environment.

Coordinate water quality planning through assistance, cooperation, and involvement with other Federal, State, and local organizations responsible for water.

Develop new scientific knowledge which will improve the effectiveness of water quality management.

Minerals

Fully mitigate or restore adverse impacts of mineral extraction on national forest system lands.

Cooperate with and assist private landowners in restoration of forested land after mineral development.

Develop and cooperatively implement scientific knowledge to minimize environmental damage.

Human and Community Development

Emphasize programs that promote involvement and greater understanding of the natural environment and demonstrate over-all social benefits.

Provide a high level and broad range of employment opportunities especially for youth, older Americans, and the disadvantaged.

Develop scientific knowledge and cooperatively implement new technology to utilize, protect, and enhance open space environments and environmental quality in urban and community forested areas.

Increase cooperative programs that provide job training.

Protection

Provide support for broad and comprehensive insect and disease control and fire protection, with special emphasis on fire management and technical assistance to private forest and range lands.

Increase law enforcement support to increase expanding non-market resource activities.

Land

Provide a moderate level of support activity for land management planning, land classification, and resource inventories to facilitate the flow of market resources and to make land available for non-market outputs and uses.

Soils

Provide a moderate level of soils support to sustain and maintain the flow of non-market outputs and to monitor

resources so that watershed conditions and soil productivity potential is maintained.

Facilities

Provide facilities to support and maintain the outputs that flow from the resource mix emphasized in this alternative, concentrating them and limiting transportation and structures to only those essential.

ALTERNATIVES
R5 and W5

Forest Service programs would provide moderate-level market and low-level non-market outputs on National Forest System lands and low-level outputs on State and private forest lands. The goal statements for Alternative V are as follows:

General

Approximate current program priorities, trends, and levels as compared to the 1975 Recommended Program.

Outdoor Recreation

Provide for the current relative national share of outdoor recreation use and activity opportunities on National Forest System lands.

Permit new or increased dispersed recreation use only where minimum administration and protection can be efficiently provided.

Encourage private investment for development of outdoor recreation facilities and services on National Forest System lands.

Provide and maintain high quality, low investment recreation facilities on National Forest System lands near urban areas.

Develop scientific knowledge in the areas of environmental protection and improved cost effectiveness of outdoor recreation programs.

Cooperate with and rely on schools and other institutions to provide information on interpretive services concerning National Forest System lands.

Participate in cooperative planning and technical

assistance programs for outdoor recreation only as part of a request for overall forest management assistance.

WILDERNESS

Complete review of potential classified Wilderness and recommend moderate increases.

Maintain Wilderness, utilizing increased rationing and regulation in fragile and high-use areas.

Recommend new Wilderness from National Forest System lands with low potential for market production.

Develop scientific knowledge for ecological protection and to determine and manage Wilderness carrying capacity.

Wildlife and Fish

Maintain natural population levels and species diversity consistent with the environment and the production of market outputs.

Maintain anadromous fish habitats on National Forest System lands.

Apply present scientific knowledge to meet the needs of threatened and endangered species habitat on and adjacent to National Forest System lands.

Maintain habitat that protects threatened and endangered species.

Maintain cooperative and technical assistance programs in areas where wildlife imbalances of special problems exist.

Range

Provide forage at present levels without impairing loss of productivity.

Maintain coordination and technical assistance efforts with other agencies and work indirectly with owners of

private forested range.

Develop scientific knowledge for improving forage utilization.

Timber

Provide current levels of timber supplies from National Forest System lands.

Emphasize utilization improvement programs and standards that focus on harvesting and processing efficiency.

Intensively manage National Forest System timber for sawtimber products and fuel wood sites with best cost/effictiveness in the long run, and with due regard for dependent community economic stability.

Continue current trend technical assistance, protection, and cooperative programs to forest landowners and processors.

Develop and use new scientific knowledge and technology to improve harvesting, utilization, processing, protection, and growth.

Water

Maintain water quantity and provide for protection of watershed areas to meet established standards.

Maintain coordinated water planning and utilization through cooperation and assistance with other Federal, State, and local organizations responsible for water affected by National System lands.

Develop and use new scientific knowledge to improve management opportunities to improve water quality.

Minerals

Recognize mineral development needs and work cooperatively to mitigate adverse mineral extraction effects on National Forest System lands.

Cooperate with private sector landowners with forests adjacent to National Forest System lands in planning mineral development and restoration or mitigation work.

Develop scientific knowledge to minimize environmental damage from mineral extraction activities.

Human and Community Development

Maintain present levels of involvement in discrete human and community development efforts that complement the activities in other Forest resource elements.

Provide current level of employment opportunities for special employment groups such as youth, older Americans, and the disadvantaged.

Develop scientific knowledge and cooperatively implement tecnology needed to protect open space environment and environmental quality in urban and community forested areas.

Provide cooperative job training programs that benefit urban areas.

Protection

Provide for moderate support activity levels for insect and disease control and for fire protection.

Provide for lower law enforcement support activities in accord with reduced non-market activities.

Lands

Provide a moderate level of support activity for land management planning, land classification, and inventories needed to facilitate the flow of market goods and services to the public.

Soils

Provide soils support at a moderate level to sustain the flow of market outputs and to monitor all resource uses to maintain watershed conditions.

Facilities

Provide facilities to support and maintain outputs that flow from the resource mix emphasized in this alternative, concentrating them and limiting transportation system and structures to those absolutely essential.

APPENDIX B

SUMMARY OF ISSUES

Factors provide a means for assessing how well an alternative addresses the significant issues in the region. An issue is defined as (1) an unsettled matter for which there exists an important trade-off between two or more factors that (2) is in dispute between two or more parties, that (3) could lead to a loss or delay in accomplishment of planned Forest Service goals and objectives, and that (4) requires a decision.

Through involvement of the general public, interest groups, research agencies, state government personnel, and Forest Service personnel, fifteen major regional issues were identified. The relationship between these issues and the factors involved in the alternative programs is shown in Table B1. The issues are summarized in the following materials.

Table B1. Relationship Between Factors and Issues

Issues \ Factors	Developed Recreation	Dispersed Recreation	Wilderness Mgmt. & Maint.	Urban & Community Forestry	Grazing Range	Sawtimber Offering	Timber prod. non-industrial forest	Road Const. Reconstruction (Act. & Coll.)	Total Employment	Water Yield Minimum Standard	Improved Watershed conditions (Add. access)	Wildlife Habitat Improvement
Wilderness	X	X	X		X	X		X	X	X	X	X
Deer Habitat & Herd Size	X	X			X	X	X	X	X		X	X
Elk Habitat & Herd Size	X	X			X	X	X	X	X		X	X
Grizzly Habitat & Population	X	X	X		X	X	X	X				X
Water		X			X	X	X	X	X	X	X	X
Roads	X	X	X		X	X	X	X	X	X	X	X
Downhill Skiing	X		X		X	X			X	X		X
Dev'd Rec. Facilities	X	X	X						X			X
Tree Management	X	X		X	X	X	X	X	X	X	X	X
Mountain Pine Beetle					X	X			X			
Urban Forestry				X								
Coop Fire Program												
Mineral Development		X	X		X				X	X		X
Objectives of Grassland Mgmt.	X	X	X		X				X			X

"HOW SHOULD THE FOREST SERVICE RESPOND TO WATER YIELD, STORAGE, TRANSMISSION, AND USE?"

SRMA X
CRMA X
GPA X

Issue Description: Most of the major rivers in the Rocky Mountain and Great Plains areas have their beginnings in the high mountains of the Southern and Central Rocky Mountain areas. The facets of this issue in the Southern and Central Rocky Mountain areas are:

- Management of watershed to maintain or increase the useable water yield.

- High mountain storage facilities.

- Trans mountain diversion system.

- Maintenance of instream flow.

The facets of this issue in the Great Plains area are:

- Irrigation systems.

- Water storage facilities.

- Water delivery systems to dry land areas.

- Water and flood control.

Rationale:

Scope - This issue covers the entire Region.

Duration - The increasing demand for water, coupled with the semi-arrid climate of this region, will always provide the basis for an issue.

Intensity - Water provides the basis for life and therefore cuts across all segments of the public.

Future Options - Unless water demand and yield can be managed to remain within feasible limits, water supply will dictate future actions abdicating most management options.

"HOW MUCH AREA SHOULD BE INCLUDED IN THE NATIONAL WILDERNESS PRESERVATION SYSTEM?"

SRMA X
CRMA X
GPA X

Issue Description: The issue of designated wilderness acreage centers around three prevalant public opinions:

- More acreage is needed in the system.
- Present acreage is adequate.
- Present acreage should be reduced.

The facets if of this issue are:

- Tradeoffs between wilderness and other resource uses.
- Effects on local economics.
- Designation of diversified eco-systems as wilderness.
- Motorized versus non-motorized access and use.
- Developed versus dispersed recreation opportunities.
- Geographic distribution of wilderness areas.

Rationale:

Scope - Although primarily centered in the Southern and Central Rocky Mountain areas, wilderness surfaced as an issue in the Great Plains where there is presently no designated acreage.

Duration - The National Wilderness Preservation System will be fully designated by 1985, if all procedures now outlined are completed.

Intensity - The intensity of the issue among most National Forest and Grassland user groups remains very high and is intensifying.

Future Options - After 1985, the options for modifying the acreage contained within the system will be virtually non-existant.

"WHAT ARE THE OBJECTIVES FOR DEER AND ELK IN TERMS OF HABITAT OBJECTIVES AND RELATED HERD SIZE?"

SRMA X
CRMA X
GPA

Issue Description: The size of elk and deer populations is directly dependent upon the amount of winter range and the unobstructed use of migratory routes. With continued encroachment of development into winter range and migration routes, the issue has surfaced.

The facets of the issue are:

- Identification of migratory routes.

- Identification of critical winter range.

- Wildlife and livestock competition on winter range.

- Developments on winter range.

- Private ownership of a large share of winter range.

- Rights of private lands owners.

- Appropriate herd sizes.

- Land acquisition.

- Cooperation with other federal, state and local governments.

Rationale:

Scope - The issue is centered in the Southern and Central Rocky Mountain areas.

Duration - THis will continue to be an issue until specific elk and deer management objectives are developed.

Intensity - The issue is of concern to Federal and State agencies, hunters, ranchers and wildlife interests.

Future Options - Unless winter range is managed and developed, development encroachment will continue intensifying the issue.

"HOW CAN FOREST SERVICE PROGRAMS FOR TREE MANAGEMENT ENHANCE OTHER RESOURCES ON FORESTED LANDS?"

SRMA X
CRMA X
GPA X

Issue Description: Management of trees on the National Forests is closely related to the other resources found there. Tree management has direct effects on wildlife habitats, water yield, scenic beauty, recreation, forage for domestic livestock and wildlife, and on the growth, vigor and health of the forest itself. Conflicting public values associated with the forest resources are what cause this issue. The facets of the issue include:

- Identification of resources to be enhanced through tree management.
- Tree harvesting methods.
- Conflicting resource values.
- Maintaining dependent industries and economics.
- Development of additional wood products markets.
- Costs of tree management programs.

Rationale:

Scope - Southern and Central Rocky Mountain areas and the National Forests of the Great Plains.

Duration - This issue wil remain as long as there are conflicting values for forest resources.

Intensity - The issue cuts across a wide spectrum of publics.

Future Options - As public pressure increases for specific resources, the management options will be reduced.

"WHAT ARE THE OBJECTIVES FOR GRIZZLY BEARS IN THE CENTRAL ROCKY MOUNTAINS IN TERMS OF THEIR HABITAT AND POPULATION?"

SRMA
CRMA X
GPA

Issue Description: The Grizzly Bear has been identified as a threatened species. The Grizzly Bear has specific habitat requirements and areas must be identified and managed to stabilize the animal's population.

The facets of the issue are:

- Lands to be identified as Grizzly habitat.
- Protection of the Grizzly's population.
- Grizzly and livestock conflicts.
- Grizzly and people confrontations.

Rationale:

Scope - The issue is concentrated in the northwestern portion of Wyoming, but the ramification of social, econoimic and resource trade-offs could be felt over a much larger area. In addition, the issue of endangered wildlife is of concern nationally.

Duration - As long as the Grizzly Bear remains an endangered species this will remain an issue.

Intensity - A large number of interest groups are concerned over the future management direction regarding the Grizzly Bear and its habitat.

Future Options - Unless specific management direction is developed, the Grizzly's population and conflicts with other uses will remain an issue.

"WHERE AND HOW MANY MILES OF ROAD SHOULD BE MAINTAINED AND DEVELOPED TO PROVIDE MOTORIZED ACCESS TO RESOURCES AND MOTORIZED RECREATION OPPORTUNITIES?"

SRMA X
CRMA X
GPA X

Issue Description: National Forests and Grasslands within the Region contain many primary, secondary and Forest roads, plus trails and travel ways. Many of the roads predate the establishment of the Forest or Grasslands. There are also many unroaded areas within the Forests and Grasslands. Different interest groups have difference objectives for roads on public lands and it is here where the issue surfaces. The facets of the issue include:

- Amount of motorized access needed.
- Uniform definition of "road".
- Conflicts with other resource users'
- Road standards.

Rationale:

Scope - The issue is primarily centered in the Southern Rocky Mountain area, but also surfaces in the Central Rocky Mountain area and the Black Hills area of the Great Plains.

Duration - As long as motorized access to resources and recreation are demanded, the issue will continue.

Intensity - The issue is of concern primarily to motorized recreationists, resource industry, groups seeking nonmotirized recreation and wilderness advocates.

Future Options - Future management options do not appear to be threatened severly.

"WHERE AND HOW MUCH DOWNWHILL SKIING OPPORTUNITIES SHOULD THE NATIONAL FORESTS PROVIDE IN THE SOUTHERN ROCKY MOUNTAINS?"

SRMA X
CRMA
GPA

Issue Description: Opening new ski areas and expanding existing facilities has increased skier capacity 750% in the last 15 years, due to increased skier demand. There is a clear need to determine how much, and where more winter sports areas should be planned for.

The facets of this issue are:

- Expansion of existing areas.
- Development of new areas.
- Effects on rural economics and social structures.
- Effects on existing support services.
- Population growth.
- Transportation access.
- Air quality.
- Water allocation.

Rationale:

Scope - The downhill skiing facility issue is of major significance in the Southern Rocky Mountain area.

Duration - As long as public demands for develped downhill skiing experiences exceeds capacities, it will remain an issue.

Intensity - The issue is of nationwide public interest. The State of Colorado has an interest related to revenues, and mountain community effects.

Future Options - Delay in establishing downhill skiing capacity objectives will result in incrased pressures from the skiing public, developers, and state agencies.

"WHAT IS THE APPROPRIATE ROLE OF THE FOREST SERVICE IN PROVIDING DEVELOPED RECREATION FACILITIES?"

SRMA X
CRMA X
GPA

Issue Description: Developed recreation use on the National Forests and Grasslands has outdistanced development of new accomodations. Use is not evenly distributed. Some developed sites are overused during peak months while other developed sites receive little use.

The facets of the issue are:

- Forest Service developments in competition with private sector management.

- Management and maintenance of sites.

- Developed recreation versus dispersed recreation.

- Balanced distribution of use.

Rationale:

Scope - The developed recreation issue is primarily centered in the Southern and Central Rocky Mountain areas, but based upon the public response to the Preliminary Area Planning Guides, it also surfaced as an issue on the Great Plains area.

Duration - As long as the demand for developed recreation areas exceed supply, this issue will remain.

Intensity - This issue has a broad base of concern among a variety of special interest groups.

Future Options: Public pressures to provide additional developed recreation sites will reduce the future management options of location, size and type of facilities to be provided. Continued overuse of existing sites will increase maintenance and law enforcement costs.

"WHAT SHOULD BE THE ROLE OF THE FOREST SERVICE IN THE MOUNTAIN PINE BEETLE INFESTATION?"

SRMA X
CRMA
GPA X

Issue Description: Thousands of Ponderosa Pine trees are killed each year by the beetles. Although a natural phenomenon in nature and nature's way of thinning decadent stands of trees, the issue has surfaced among the public.

The major facets of the issue are:

- Degradation to short term scenic values.
- Infestation of private stands.
- Infestation of stands with commercial value.

Rationale:

Scope - Primarily centered along the Front Range of Colorado and the Black Hills of South Dakota and Wyoming.

Duration - Although cyclical in nature, the Pine Beetle will remain an issue as long as it remains in epidemic proportions.

Intensity - The Pine Beetle has captured the concern of a large portion of Front Range and Black Hills residents as well as State and Federal agencies.

Future Options - Future management options seem only to be constrained by tecchnology, budget, manpower, and cooperative efforts.

"HOW SHOULD THE FOREST SERVICE RESPOND TO MINERAL DEVELOPMENT?"

SRMA X
CRMA X
GPA X

Issue Description: Portions of National Forests and Grasslands within the Region are underlaid with minerals such as molybdenum, zinc, gold and silver and energy fuels such as coal, oil, gas and uranium. The nation demands more of these materials and the issue arises.

The facets of this issue are:

- Enforcement of pollution standards.
- Exploration on public lands.
- Extraction of the material.
- Reclamation of the disturbed areas.
- Transportation of the materials across public lands.
- Associated impacts to populations due to mineral development.

Rationale:

Scope - The issue covers the entire Region.

Duration - As long as industry and consumers demand minerals and energy fuels, this will remain an issue in areas where minerals and energy fuels are located.

Intensity - This issue cuts across all interest groups within the Region and nation.

Future Options - As supplies decrease and demands increase, fewer options will remain for management alternatives.

"WHAT ARE THE MANAGEMENT NEEDS OF THE URBAN COMMUNITY FORESTS IN THE GREAT PLAINS AND HOW MUCH EMPHASIS SHOULD THE FOREST SERVICE PLACE ON MANAGEMENT PROGRAMS FOR THEM?"

SRMA
CRMA
GPA X

Issue Discription: Trees were planted in and around Great Plains cities and towns. Since that time, management of those trees has been nearly non-existent. resulting in overmature, even aged, decadent stands, highly susceptible to insects and disease.

The facets of the issue are:

- Loss of urban and community forests.

- Level of Federal assistance.

Rationale:

Scope - Centered around cities and towns of the Great Plains areas.

Duration - Issue will continue until Urban and Community Forests are brought under management.

Intensity - Although trees are of great value to the communities of the Great Plains most people have a tendency to take them for granted, until they are gone. It appears, at this time, that the issue is of concern to professional foresters.

Future Options - Options for Forest Service research and Cooperative State and Private Forestry programs are good at the present time. However, continued loss of trees in urban forests could destroy future options.

"WHAT SHOULD BE THE FEDERAL ROLE
IN CONTRIBUTING TO THE COOPERATIVE
FIRE PROGRAM?"

SRMA
CRMA
GPA X

Issue Description: Rural areas need protection from wildfire. Crops, grasslands, shelterbelts, outbuildings and homes all need to be protected. Local tax bases often aren't sufficient enough to provide for the protection needed. State and Federal assistance is needed.

The facets of the issue are:

- Property loss due to wildfire.

- Level of Federal assistance.

Rationale:

Scope - Centered in the Great Plains area.

Duration - The issue remains as long as insufficient dollars are provided to assist rural fire departments.

Intensity - The issue is of concern to rural residents, volunteer fire departments, state federal fire officials.

Future Options - Future options do not appear to be threatened.

"HOW CAN THE FOREST SERVICE ASSIST LAND OWNERS TO IDENTIFY OBJECTIVES OF GRASSLAND MANAGEMENT ON THE GREAT PLAINS: WHAT ROLE SHOULD THE NATIONAL GRASSLANDS PLAY IN MEETING IDENTIFIED PURPOSES?"

SRMA
CRMA
GPA X

Issue Description: The National Grasslands, reclaimed from areas devastated by improper use during the "dust bowl" of the 1930's have accomplished a major objective by replacing the valuable vegatative cover to protect the soil. However, the National Grasslands contain valuable resources besides forage for livestock and habitat for wildlife and hence, the issue arises.

The facets of this issue are:

- Minerals and energy fuels exploration and extraction.

- Grasslands Wilderness Areas.

- Educational demonstration areas for proper Grassland management.

- Increased recretion demands.

- Grazing and wildlife.

Rationale:

Scope - The issue pertains to the National Grasslands of the Great Plains area.

Duration - The issue will continue as alternative uses for the National Grasslands are demanded.

Intensity - The issue is growing in intensity as the National Grasslands are being "discovered" as lands of minerals, energy fuels, possible wilderness, and recreation use.

Future Options - Future management options can be preserved if firm objectives are set in the near future.

"HOW CAN FOREST SERVICE PROGRAMS-
BOTH NATIONAL FOREST SYSTEM
ADMINISTRATION RESEARCH AND
COOPERATIVE FOREST MANAGEMENT-
OFFSET WILDLIFE HABITAT REDUCTION
AND CONTRIBUTE TO SATISFACTION
OF WILDLIFE RELATED DEMANDS?"

SRMA	
CRMA	
GPA	X

Issue Description: Wildlife habitat on the Great Plains is being reduced as new farming methods, water storage facilities, and urban expansion are being developed.

The facets of the issue are:

- Reduction in wildlife populations.

- The farmers right to earn a living from his property.

- Land needs for development.

- Wildlife hunting and viewing opportunities.

Rationale:

Scope - Primarily centered on the Great Plains.

Duration - The issue will remain as long as wildlife populations are decreating.

Intensity - Several interest groups are involved, although all may not be aware of the situation.

Future Options - Options for Forest Service research, Cooperative Programs for State and Private Forestry, National Grasslands demonstrations, and cooperative management do not appear to be severaly threatened at this time.

APPENDIX C

SUMMARY OF DECISION RATIONALE AS DEVELOPED IN THE APPLICATION OF THE FACTOR PROFILE TECHNIQUE AND SUBMITTED TO THE WO

This document explains the rationale for revisions in the five alternatives for the 1980 RPA update. The revisions were made to the August 11 submission (see our letter of August 16). The revisions include some deviations in 1981 output and dollar constraints established by the Chief if his letter in July 14, 1978. This document also addresses 1995 targets for some selected programs and outputs that are of particular concern to the Region.

II. GENERAL FACTORS OF IMPORTANCE IN THE 1980 RPA UPDATE

The following items are of particular concern to this Region. They involve some of the original target ranges established by the Washington Office, and some of the 1981 constraints established on July 14, 1978. They also address some of the longer range aspects of programs, i.e., 1995 in addition to 1981 to 1985. Region 2's recommended outputs are displayed on the graphs in Section III.

II.1 Water Quality at Minimum Standards

The output targets established by the Washington Office

require the Region to reduce its current level of water quality. Water quality should not be below that of 1977 under any alternative. Meeting the prescribed level would violate legal directions and be inconsistent with National and Regional goals to maintain or improve water quality.

Unless the measurement techniques used by the Regional Office and Washington Office are different, it appears that the Washington Office output is in error rather than direction to reduce current production of water at or above minimum standards by 40 percent.

II.2 Timber Production Yield Non-Industrial Private Land

Accomplishment of the Washington OFfice level would require conversion of prime agricultural land to forest. and in each alternative would negatively impact recreation and wildlife use. Also, nursery capability for required seeds and seedlings is inadequate to meet the Washington Office levels in all alternatives.

Washington Office figures for each alternative were assumed to be in error. (Example: Alternative I, Washington Office figure was 4100 MMBF. Should this have been 410 MMBF?)

II.3 Urban and Community Forestry

The Region recommends a higher output level in all alternatives. Urban and community forestry projects obtain

support from urban legislators for the total S&PF programs, especially the associated rural programs.

For Alternative I, urban and community forestry projects are non-market activities and should increase rather than decrease. The Washington Office level of output for Alternative III is a severe decrease rather than the moderate program described in the goal statement. The Washington Office level of output for Alternative IV is a drop in this non-market activity, contrary to the goal statements and assumptions for this alternative. Urban and community forestry projects are non-market activities and should increase rather than decrease for Alternative V.

II.4 Wildlife Habitat Improvement

There is interaction and complementary relationships between vegetative management and wildlife benefits for all alternatives. Region 2's short- and long-range wildlife habitat improvement outputs reflect this relationship. About one-third of the timber management program is specifically oriented to habitat improvement.

The Regional figures also reflect continuation of the State's trend of shifting from law enforcement toward emphasis on management of game and non-game species, and improving effectiveness of cooperative programs.

II.5 Dispersed Recreation

Regional recommendations show higher outputs in each alternative because of the following factors:

A simple linear expansion of current recreation trends results in 28 MMRVD by 1995.

If energy prices incrase sharply, local residents would recreate in local forests rather than travel outside the Region, as many do now.

If increasing energy prices curtail traditional modes of access to forest lands, alternative methods such as mass transit will still provide adequate access.

Populations are increasing in the Region at a higher rate than the national average. This has resulted primarily from energy development.

The Washington OFfice level appears to be allocated among the Regions according to their "fair share" of historical trends. Such an allocation ignores changing demand and opportunity levels among the Regions.

II.6 Road Construction and Reconstruction

All alternatives show Regional outputs exceeding Washington Office tentative targets. Regional outputs are based on the following:

Collector and arterial roads account for only 15 percent of the total transportation system mileage. However, the expenditures are large and effect the total system.

The preferred outputs are more consistent with the total transportation system needed to accomplish goals and objectives.

The Regional output level must be met in order to accomplish the wildlife, timber, and recreation targets.

II.7 Domestic Livestock Grazing

The Region should not exceed 2.52 MMAUM's for any

alternative. This is based on the assessment made by the Region and submitted to the Washington Office on 7/26/78.

The Washington Office level for Alternative I exceeds the Region's capacity to provide grazing without impairing the long-term productivity of the land. Neither the Washington Office or Regional output corresponds to the goal statement for Alternative II. The preferred position satisfies the goal statement without seriously impacting the dependent industry. Meeting the Washington Office level would require a reduction of about 325 permittees. The Washington Office output level for Alternative III is the most consistent with low level market emphasis of this alternative.

II.8 Developed Recreation

Rationale given under dispersed recreation also applies to all alternatives here. In addition, the regional recommendation reflects winter sports activities in areas currently operating. plus that activity anticipated from:

Current approved special use applictions for future area developments.

Special use applications pending approval for potential site developments.

Inventoried sites for which no special use applications have been entered, but which demand projections indicate will be needed in the long-range.

These outputs are not reflected in Washington Office output levels, but are valid considerations, especially by 1995.

according to current literature (see October, 1978 issue of Colorado Business) and the Colorado Review Process.

II.9 Wilderness Management and Maintenance

In light of RARE II, the Washington Office output level for Alternative II is below reasonable expectations.

II.10 Sawtimber Offering

Accomplishing the Regional output level in Alternative IV is necessary to meet the wildlife objectives, which is consistent with the non-market orientation of this alternative. The Regional level for Alternative V corresponds with the goal statement and assumptions for this alternative. The Region is currently producing at a moderate level.